

Duodenorenal Fistula after Microwave Ablation Presenting as Melena

V.V. Pavan Kedar Mukthinuthalapati, MBBS¹, Bashar Attar, MD, PhD², Hemant Mutneja, MBBS², Moinuddin Syed, MBBS¹, and Seema Gandhi, MD²

¹Division of Internal Medicine, John H. Stroger Jr. Hospital of Cook County, Chicago, IL

²Division of Gastroenterology, John H. Stroger Jr. Hospital of Cook County, Chicago, IL

ABSTRACT

A 53-year-old man presented with melena 3 months after microwave ablation of a renal mass. Esophago-gastroduodenoscopy and radiological imaging revealed that a fistulous tract extended from the duodenum to the right kidney. The patient had a hemorrhage that originated from a branch of the renal artery and bled through the fistulous tract into the duodenal lumen. Angiography was used in the successful coiling of the bleeding vessel to control the bleeding. Consideration of a fistulous tract as a source of gastrointestinal bleeding should be included in a clinician's differential diagnosis when dealing with patients who had a recent ablative procedure.

INTRODUCTION

Percutaneous ablative therapies provide a viable treatment option for kidney tumors in nonsurgical candidates.¹ Cryoablation, radiofrequency ablation, and microwave ablation (MWA) are techniques that have been studied for renal tumors, of which MWA is the most novel.¹

CASE REPORT

A 53-year-old man presented to the emergency room with complaints of generalized swelling and dyspnea at rest. He had a past medical history significant for congestive heart failure, chronic kidney disease, and compensated liver cirrhosis due to congestive hepatopathy (Child's-Pugh class B, MELD-Na 23). He was incidentally diagnosed with a 4.5-cm exophytic renal mass within the right kidney 8 months prior to presentation, which was treated with MWA 3 weeks prior to presentation (Figure 1). Physical exam was significant for stable vital signs, jugular venous distension, bibasilar crackles, abdominal distension, and anasarca. Hemoglobin at presentation was 9.9 g/dL, and white blood cell count was elevated at 11,100/μL. Serum creatinine was close to the baseline of 2.5 mg/dL.

The patient was admitted for acute decompensation of heart failure, but during his hospitalization he developed melena, with a subsequent drop in Hb to 6.7 g/dL. He was started on intravenous octreotide, pantoprazole, and ceftriaxone for infection prophylaxis. An emergent esophagogastroduodenoscopy (EGD) revealed no varices, but a large fistulous opening in the first portion of the duodenum was noted (Figure 2). When the endoscope was passed into the opening, adipose tissue and a large clot were noted (Figure 3). An emergent computerized tomography (CT) scan of the abdomen and pelvis revealed a fluid collection in the right retroperitoneum, with air and oral contrast tracking from the duodenum to the ablated renal mass, suggestive of a fistulous tract (Figure 4). A CT-guided drain placed into the fluid collection revealed purulent fluid, which grew *Streptococcus anginosus*, *Enterococcus* and *Streptococcus* species on bacterial culture.

ACG Case Rep J 2018;5:e76. doi:10.14309/crj.2018.76. Published online: October 24, 2018.

Correspondence: V.V. Pavan Kedar Mukthinuthalapati, MBBS, Division of Internal Medicine, John H. Stroger Jr. Hospital of Cook County, 1900 W Polk St, 15th Floor, Chicago, IL 60612 (mvvpavankedar@gmail.com).



Copyright: © 2018 Mukthinuthalapati et al. This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0>.

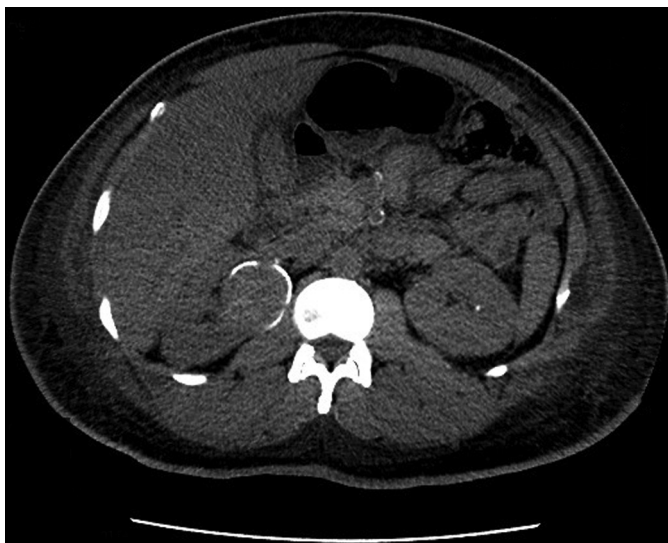


Figure 1. Abdominal/pelvic computed tomography (CT) image showing the renal mass before microwave ablation.

Four days into the admission, the patient had hematochezia, hematuria, and hypotension, with a subsequent drop in hemoglobin from 9.9 g/dL to 4.6 g/dL. Emergent EGD revealed a large amount of blood and clots in the stomach, as well as a large clot at the opening of the known duodenorenal fistula. The source of bleeding appeared to be from within the fistulous tract, so endoscopic management of bleeding was not attempted. Emergent angiography was performed by interventional radiology, revealing an active bleed from a branch of the right renal artery, which was coiled successfully (Figure 5). No recurrence of bleeding was noted after this procedure. However, the patient had a complicated medical course due

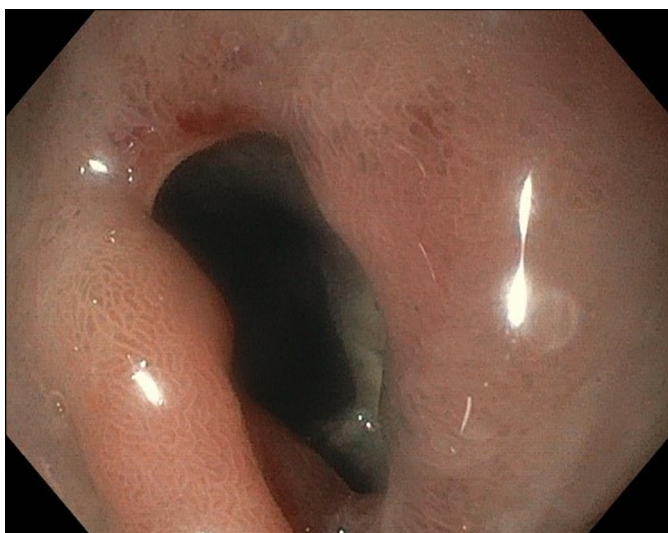


Figure 2. Upper endoscopy of the duodenal fistula through the second portion of duodenum.

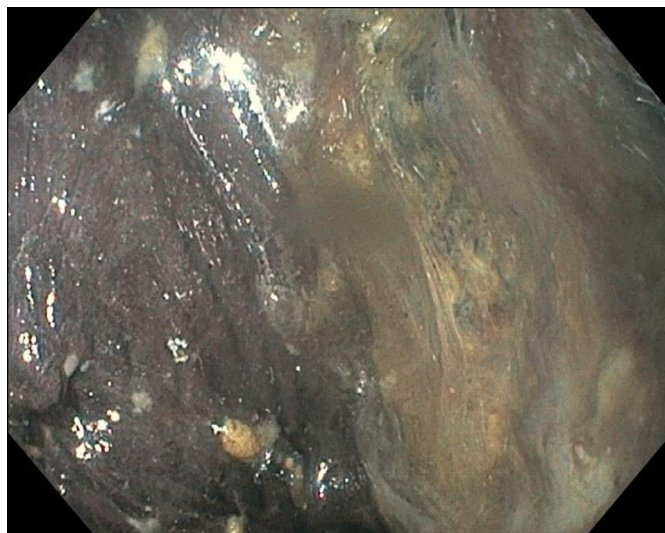


Figure 3. Internal view of fistula showing the occlusive clot.

to his other medical problems, leading to cardiac arrest and his death 37 days after admission.

DISCUSSION

Renal masses are surgically resected or ablated due to concern for malignancy.² MWA uses infrared radiation to generate heat and induce coagulative necrosis within the target tissues.³ In this patient, a diagnostic biopsy of the mass was inconclusive. Because there was concern for malignancy, a repeat biopsy was taken, and an interventional radiologist



Figure 4. CT image of the duodenorenal fistula.

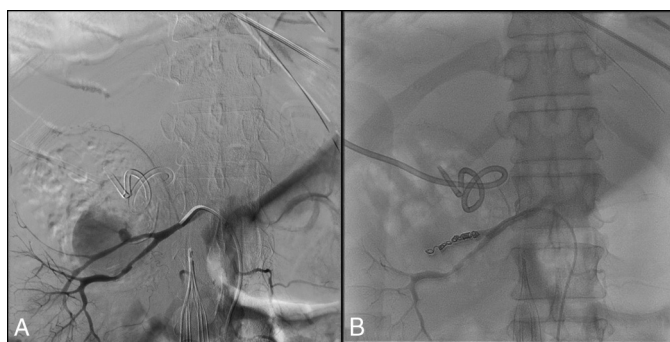


Figure 5. Radiograph film taken (A) during angiography showing the bleeding artery and (B) after coiling of the bleeding artery.

performed MWA of the renal mass with a 17-gauge microwave probe. The needle tract was ablated as the needle was withdrawn. Because the renal mass occupied most of the upper pole and ablation of the mass in its entirety was confirmed by the postprocedural scan, it is unlikely that the prior biopsy of the mass contributed to the hemorrhage. Unfortunately, the biopsy performed on the mass during the procedure was nondiagnostic. MWA has been shown to be an efficacious and safe modality of ablation for renal masses.⁴⁻¹¹ The complication rate is low, and the most common complications are hematuria or perinephric hematomas.⁴⁻¹¹ This patient developed a duodenorenal fistula and retroperitoneal abscess 3 weeks after MWA of his renal mass, likely due to injury of the bowel during the procedure. It was also complicated by a renal artery hemorrhage, which bled into the duodenorenal fistula as seen on endoscopy and imaging.

Bowel injury is a rare complication of renal tumor ablation.^{9,11-13} Patient repositioning or instillation of gas or fluid between bowel and kidney are usually performed before the procedure to increase the distance between kidney and bowel.¹⁴ In the literature, there are 7 published case reports of bowel injuries secondary to renal ablative techniques.^{9,15-19} Of these, 5 cases occurred after cryoablation,¹⁶⁻¹⁹ 1 case occurred after radiofrequency ablation,¹⁵ and one occurred after MWA.⁹ Among these case reports, injuries affected the colon and the small intestine, leading to sepsis, formation of abscesses or fistulae, and bleeding.^{9,15-19} With medical management alone, more than half of the cases had complete resolution of the fistulae or infection. Among the published cases, a surgical approach was preferred when there was uncontrolled hemorrhage, overwhelming infection, or debilitating symptoms affecting the patient's quality of life.^{9,15,19} Our patient was a poor surgical candidate and therefore was treated conservatively with procedures guided by interventional radiology to drain the abscess and control active bleeding. However, it is difficult to interpret the efficacy of the chosen approach in this patient because his multiple medical problems led to cardiac arrest during the hospitalization. We suggest medical management of bowel injuries occurring after renal ablation

procedures, reserving surgical management for those with more advanced complications.

We describe a case of duodenorenal fistula and abscess formation complicated by hemorrhage after microwave ablation of a renal mass. These techniques rarely cause intestinal complications, but it is important to obtain a history of these ablative techniques when assessing a patient with abdominal complaints or gastrointestinal bleeding. Medical management may be preferred for the treatment of bowel injuries in the absence of complications such as uncontrollable hemorrhage, overwhelming infection, or severe symptoms. In addition, angiography can provide timely treatment for severe hemorrhage that can occur after renal ablation, deferring the need for surgery.

DISCLOSURES

Author contributions: All authors contributed equally to this article. V.V.P.K. Mukthinuthalapati is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained from the deceased patient's next of kin for this case report.

Received April 1, 2018; Accepted September 12, 2018

REFERENCES

1. Ramanathan R, Leveillee RJ. Ablative therapies for renal tumors. *Ther Adv Urol*. 2010;2(2):51-68.
2. Frank I, Blute ML, Cheville JC, et al. Solid renal tumors: An analysis of pathological features related to tumor size. *J Urol*. 2003;170(6 Pt 1):2217-20.
3. Carrafiello G, Laganà D, Mangini M, et al. Microwave tumors ablation: Principles, clinical applications and review of preliminary experiences. *Int J Surg*. 2008;6(Suppl 1):S65-9.
4. Liang P, Wang Y, Zhang D, et al. Ultrasound guided percutaneous microwave ablation for small renal cancer: Initial experience. *J Urol*. 2008;180(3):844-8.
5. Lin Y, Liang P, Yu XL, et al. Percutaneous microwave ablation of renal cell carcinoma is safe in patients with a solitary kidney. *Urology*. 2014;83(2):357-63.
6. Yu J, Liang P, Yu XL, et al. US-guided percutaneous microwave ablation versus open radical nephrectomy for small renal cell carcinoma: Intermediate-term results. *Radiology*. 2014;270(3):880-7.
7. Genson P-Y, Mourey E, Moulin M, et al. Image-guided percutaneous microwave ablation of small renal tumours: Short- and mid-term outcomes. *Quant Imaging Med Surg*. 2015;5(5):649-55.
8. Yu J, Zhang G, Liang P, et al. Midterm results of percutaneous microwave ablation under ultrasound guidance versus retroperitoneal laparoscopic radical nephrectomy for small renal cell carcinoma. *Abdom Imaging*. 2015;40(8):3248-56.
9. Dong X, Li X, Yu J, et al. Complications of ultrasound-guided percutaneous microwave ablation of renal cell carcinoma. *Onco Targets Ther*. 2016;9:5903-9.
10. Gao Y, Liang P, Yu X, et al. Microwave treatment of renal cell carcinoma adjacent to renal sinus. *Eur J Radiol*. 2016;85(11):2083-9.
11. Wells SA, Wheeler KM, Mithgal A, et al. Percutaneous microwave ablation of T1a and T1b renal cell carcinoma: Short-term efficacy and complications with emphasis on tumor complexity and single session treatment. *Abdom Radiol (NY)*. 2016;41(6):1203-11.

12. Howenstein MJ, Sato KT. Complications of radiofrequency ablation of hepatic, pulmonary, and renal neoplasms. *Semin Intervent Radiol.* 2010;27(3):285-95.
13. Kim KR, Thomas S. Complications of image-guided thermal ablation of liver and kidney neoplasms. *Semin Intervent Radiol.* 2014;31(2):138-48.
14. Kurup AN. Percutaneous ablation for small renal masses: Complications. *Semin Interv Radiol.* 2014;31(1):42-9.
15. Boone J, Bex A, Prevoo W. Percutaneous radiofrequency ablation of a small renal mass complicated by appendiceal perforation. *Cardiovasc Intervent Radiol.* 2012;35(3):695-9.
16. Morgan AI, Doble A, Davies RJ. Successful conservative management of a colorenal fistula complicating percutaneous cryoablation of renal tumors: A case report. *J Med Case Rep.* 2012;6(1):365.
17. Shimizu K, Mogami T, Michimoto K, et al. Digestive tract complications of renal cryoablation. *Cardiovasc Intervent Radiol.* 2016;39(1):122-6.
18. Vanderbink BA, Rastinehad A, Caplin D, et al. Successful conservative management of colorenal fistula after percutaneous cryoablation of renal-cell carcinoma. *J Endourol.* 2007;21(7):726-9.
19. Wysocki JD, Joshi V, Eiser JW, Gin N. Colo-renal fistula: An unusual cause of hematochezia. *World J Gastrointest Pathophysiol.* 2010;1(3):106-8.